

III. REMARKS

Status of the Claims

Claim 12 is amended. Claims 13-19 are amended with respect to their dependency on claim 12. Claims 12-19 are submitted for further consideration.

Summary of the Office Action

Claims 12-19 stand rejected under 35USC102(b) on the basis of the cited reference Watanabe, U.S. Patent No. 4,500,914. Claim 16 stands rejected under 35USC103 on the basis of the teaching of the cited reference Watanabe. The Examiner is respectfully requested to reconsider his rejection in view of the newly submitted claims and the following remarks.

The invention, is clearly described in independent claim 12 as requiring a filter structure comprising repeating adjacent blocks of filter groups, each group including two colour filters for every four filterless/non-colour filters.

In the Examiner's analysis of the cited art, the teaching of Watanabe is characterized as follows:

"wherein said one or more areas adapted so as to allow light to pass there through onto corresponding image sensors without color filtering comprise four filter-less areas or non color-filters (figure 8b; In the first two rows and three columns, there are four white colorless filters.)"

Figure 8b is described as a diagram similar to FIG. 4 showing modifications thereof. Fig. 4 is a diagram partly showing a color imaging array. The elements depicted in figure 8b are an arbitrary extract of a larger array. The Examiner is speculating as to what constitutes a repeating block of filter groups. Two rows and three columns are not a repetitive block of filter

groups as described in claim 12. The Examiner seems to anticipate this deficiency by stating as follows:

"wherein the filters are arranged such that in each repeating filter block there are two color filters for every four filter-less/non-color filters (figure 8b; The shown picture is a piece of the whole structure. Therefore, the first two rows and three columns will repeat when the piece is placed within the whole structure. Also, the Examiner reads the claim based on the broadest possible interpretation. The claim does not specify that the pattern be repeating and adjacent.)

The adjacent nature of filter groups is inherent in these structures as it is necessary that they be balanced. In the Examiner's hypothetical structure, there may be extra elements left over. Nevertheless, Applicant has amended claim 12 to indicate that the groups are adjacent. In short, it is clear that Watanabe teaches the presence of two white filters for every two color filters. Conversely, in the subject invention, as presently defined in claim 12, there are provided in each block, a group of filters comprising two color filters and four non-color filters.

The claimed structure of colour pixels, combined with the luminance pixels, create colour different components (U and V), which necessitate minimum calculations in order to determine YUV equivalent components. Advantageously, this arrangement maps to MPEG and JPEG colour formats in a convenient manner that makes MPEG/JPEG easy to compute. More specifically, the pixel structure facilitates calculating the components needed for MPEG and JPEG directly from YUV 4:2:0. Further, the present invention allows calculation of the Y components from only a minor correction of the luminance output from U and V components in a simple calculation. No complex interpolation needs to be carried out, and the grey value for the U and V components is accurate, being half a pixel from actual values (the lens performance being

defined by the pitch between grey pixels). This is described, for example at page 5, line 25 and also at page 4, lines 13 to 17 of the present specification:

"because the gray resolution and color resolution of an image sensor of the present invention is designed to match those of MPEG and JPEG".

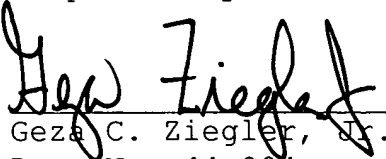
Through the subject invention, a greater sensitivity of the sensor is provided.

The cited reference Watanabe is deficient with respect to key elements of the claims of this application. Applicant submits that it does not, therefore, support the rejections based on anticipation nor the rejection based on obviousness.

In view of the remarks stated above, Applicant submits that all of the claims under consideration contain patentable subject matter and favorable action by the Examiner is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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5 August 2004
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